MONTANA FISH, WILDLIFE & PARKS
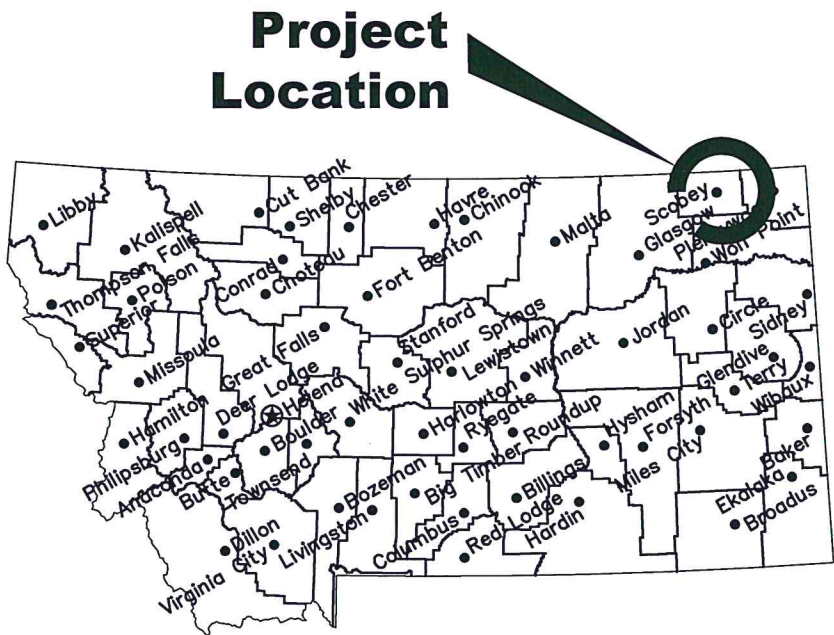
Whitetail Dam Weir Repairs

near Whitetail, MT
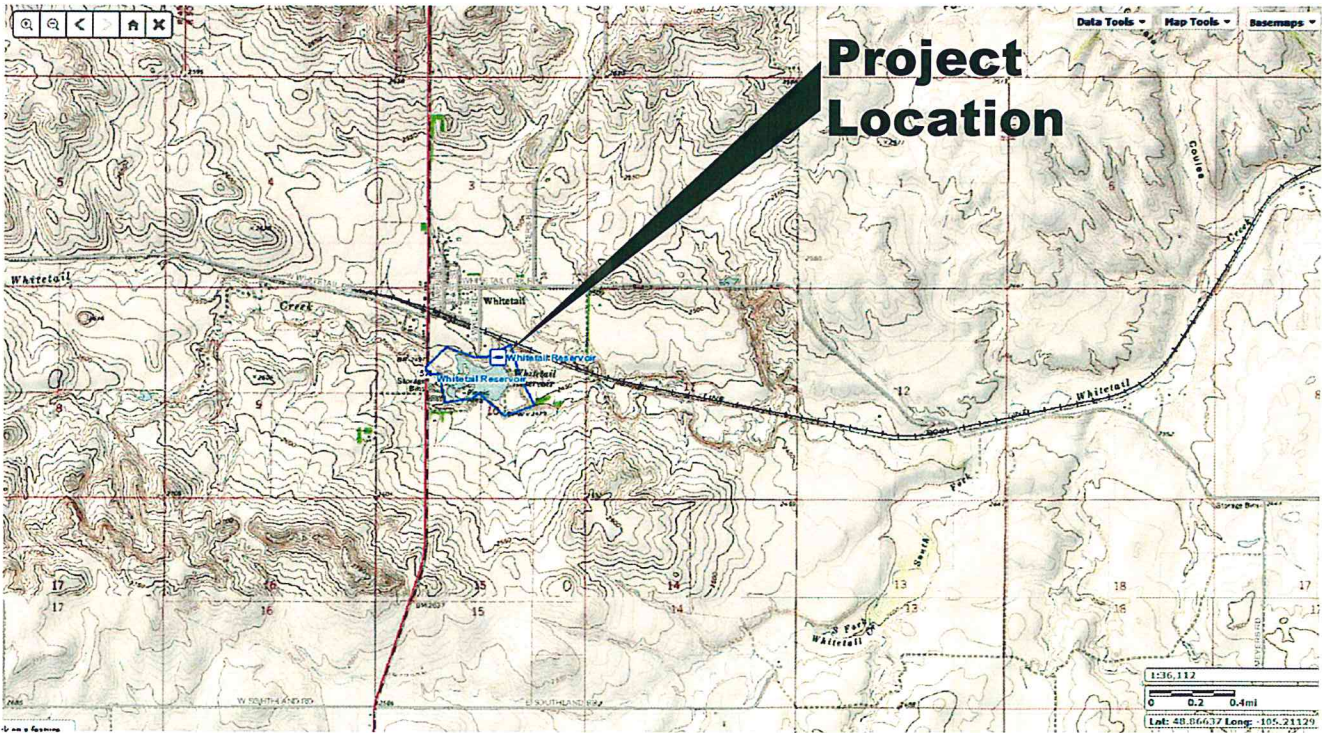
#7073704

Project Location

Location Map
No Scale

North

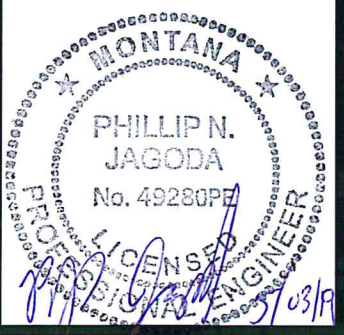**Project Location**

Vicinity Map
No Scale

MONTANA FISH, WILDLIFE AND PARKS
DESIGN AND CONSTRUCTION

MAILING ADDRESS: PHYSICAL ADDRESS:
PO BOX 200701   1522 9th AVENUE
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DRAWING INDEX

Sheet Number	Sheet Title
1	COVER SHEET
2	SITE PLAN
3	DETAIL SHEET I
3	DETAIL SHEET II
3	DETAIL SHEET III

MONTANA
PHILLIP N.
JAGODA
No. 49280PE
PROFESSIONAL LICENSED ENGINEER

P. Jagoda	4/23/2019		
DRAWN BY:	DATE:	APPROVED BY:	DATE:
P. Jagoda	4/23/2019		
CHECKED BY:	DATE:	APPROVED BY:	DATE:

APPROVED BY:	DATE:	
APPROVED BY:	DATE:	

MONTANA FISH, WILDLIFE & PARKS

Cover Sheet
Whitetail Dam - Weir Repairs

SHEET: 1 of 5

LEGEND

EXISTING FEATURES

EX. SPOT GRADE	⊕ 2229.32'
EX. CONTOUR	3126
CONTROL POINT	△ CP2

Desc.	Northing	Easting	Elev.
CP1	1721288.2380	3012696.8730	2498.02
CP2	1721376.2275	3012808.7340	2490.57

NOTES:

1. TOP OF ABUTMENT & WEIR CAP ELEVATIONS WERE RECORDED BY MT FISH, WILDLIFE & PARKS ON NOVEMBER 1, 2018.
2. VERTICAL CONTROL IS BASED ON NAVD88. HORIZONTAL CONTROL IS MT STATE PLANE.
3. ANY UTILITIES DEPICTED ON THESE PLANS ARE IN ACCORDANCE WITH THEIR ACHIEVED "QUALITY LEVELS" AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEER'S DOCUMENT ASCE 38, "STANDARD FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." BEFORE DIGGING, CALL 811 FOR LOCATION OF EXISTING UTILITIES.

VICINITY MAP
SCALE: 1":500' (approx.)

LAKEVIEW DRIVE

HWY 5 11

WHITETAIL RESERVOIR

SHEET PILE WEIRS TO BE IMPROVED

WEIR LOCATION MAP
SCALE: 1": 30'

Scale:
0   30   60

TOP OF ABUTMENT CAP ELEV. (SURVEYED)
TOP OF WEIR CAP ELEV. (SURVEYED)

CP2 3 2490.57

WEIR 1   WEIR 2   WEIR 3   WEIR 4

CP1 2498.02

STRUCTURE ELEVATIONS

	WEIR NO. 1	WEIR NO. 2	WEIR NO. 3	WEIR NO. 4
TOP OF ABUTMENT CAP (DESIGN)	N/A	2486.5	2482.0	2477.5
TOP OF WEIR CAP (DESIGN)	N/A	2482.0	2477.5	2473.0

Site Plan
Whitetail Dam - Weir Repairs

SHEET PILE WEIR REPAIR DETAIL

TYPICAL STRUCTURE PROFILE

Labels on drawing:

- REMOVE, SALVAGE & REINSTALL PILE CAP
- TOP OF COMPACTED DIKE
- EX. 3" DIA. WEEP HOLES IF WEEP HOLES ARE DAMAGED DURING DRIVING, PATCH & CUT NEW 3" WEEP HOLE
- 4X4 ANGLE IRON BRACING WELDED TO SHEET PILES (TYP. BOTH SIDES)
- 44.5'
- 89'
- 25'
- 19.5'±
- WEIR LENGTH 50'
- TOP OF ABUTMENT CAP
- 3:1 SLOPE
- 4.5'
- 3:1 SLOPE
- TOP OF WEIR CAP & UPSTREAM ROCK
- 12.5'
- 12.5'
- 20.5'
- EX. 2' LAYER CLASS II RIPRAP W/GEOTEXTILE
- 12'
- UPSTREAM CHANNEL 50'
- DOWNSTREAM CHANNEL 23'
- EX. SZ-22 SHEET PILE (TYP.)
- 16'
- EX. 2' LAYER CLASS II RIPRAP W/ GEOTEXTILE
- 4'
- 4'
- Min. 18" From Weir Crest Elev. (but in no case <15' (embedment)
- Min. 18" From Weir Crest Elev. (but in no case <15' (embedment)
- 11.5'
- 13.5'
- 19.5'
- PROPOSED 'H' PILES: HP8x36 OR LARGER (TYP. BOTH SIDES)

ONLY HALF OF SHEET PILES ARE SHOWN FOR CLARITY, WHICH ARE SYMMETRICAL ABOUT CENTER OF STRUCTURE

DIMENSIONS ARE TYPICAL OF ALL STRUCTURES. SEE CHART FOR SPECIFIC ELEVATIONS.

'H' PILES TO BE CENTERED ON THE MOST OUTBOARD PAIRS OF ABUTMENT SHEET PILES WITH THEIR FLAT SURFACES ON THE DOWNSTREAM SIDE. 'H' PILES TO STRADDLE THE JOINT BETWEEN THE TWO SHEETPILES. (SEE DETAIL III SHEET 5)

NOTES:
1. WEIR & ABUTMENT INFORMATION TAKEN FROM ELECTRONIC PLANS, TITLED "WHITETAIL DAM", PREPARED BY DUCKS UNLIMITED, DATED 8-6-1996.
2. ALL WELDS TO BE 1/4" FILLET WELDS (SEE SPECIFICATIONS).
3. ALL WELDS SHALL BE TO AWS STANDARDS. WELDS SHALL NOT EXHIBIT CRACKS, UNFILLED CRATERS, SLAG INCLUSIONS, OR POORLY FORMED BEADS. UNDER OR OVER WELDING, MISALIGNMENTS, EXCESSIVE POROSITY OR WARPAGE WILL NOT BE ALLOWED.
4. ANY DAMAGE CAUSED TO TOP OF SHEET PILE DURING DRIVING SHALL BE REPAIRED. IF EXTENSIONS TO SHEET PILES ARE REQUIRED DUE TO DAMAGE, BUTT WELDS SHALL BE REQUIRED. PATCH EXIST. AND CUT NEW 3" DIA. WEEP HOLES IN SHEET PILES IF REQUIRED DUE TO DAMAGE.

GENERAL SCOPE OF WORK
1. PROPOSED WORK IS LIMITED TO STRUCTURES 2, 3, AND 4. STRUCTURE NO. 1 HAS NOT EXHIBITED ANY FROST JACKING.
2. REMOVE RIPRAP, GEOTEXTILE & FILL MATERIAL AS NECESSARY.
3. REMOVE EXISTING PILE CAPS AND SALVAGE FOR RE-INSTALLATION.
4. DRIVE FROST-JACKED SHEET PILES BACK TO DESIGN ELEVATIONS.
5. INSTALL H-PILE BRACING AS INDICATED IN DETAILS AT STRUCTURES 2, 3, & 4.
6. INSTALL 4x4 ANGLE IRON BRACING AND WELD TO SHEET PILES AND H-PILE BRACING.
7. WELD ALL SHEET PILES TOGETHER WITH VERTICAL WELDS, MIN. OF 4 FT. OF WELD SHALL BE USED.
8. RE-INSTALL AND WELD PILE CAPS AS INDICATED IN DETAILS, NOTES, & SPECIFICATIONS.
9. REPLACE RIPRAP, GEOTEXTILE & FILL MATERIALS AS NECESSARY.
10. REFER TO DETAILS, TECHNICAL SPECIFICATIONS, AND BID FORM FOR FULL EXTENT OF PROPOSED WORK.

STRUCTURE ELEVATIONS

	STRUCTURE NO. 1	STRUCTURE NO. 2	STRUCTURE NO. 3	STRUCTURE NO. 4
TOP OF COMPACTED DIKE	N/A	2487.5	2483.0	2478.5
TOP OF ABUTMENT CAP	N/A	2486.5	2482.0	2477.5
TOP OF WEIR CAP & UPSTREAM ROCK	N/A	2482.0	2477.5	2473.0

Scale:

0 10 20

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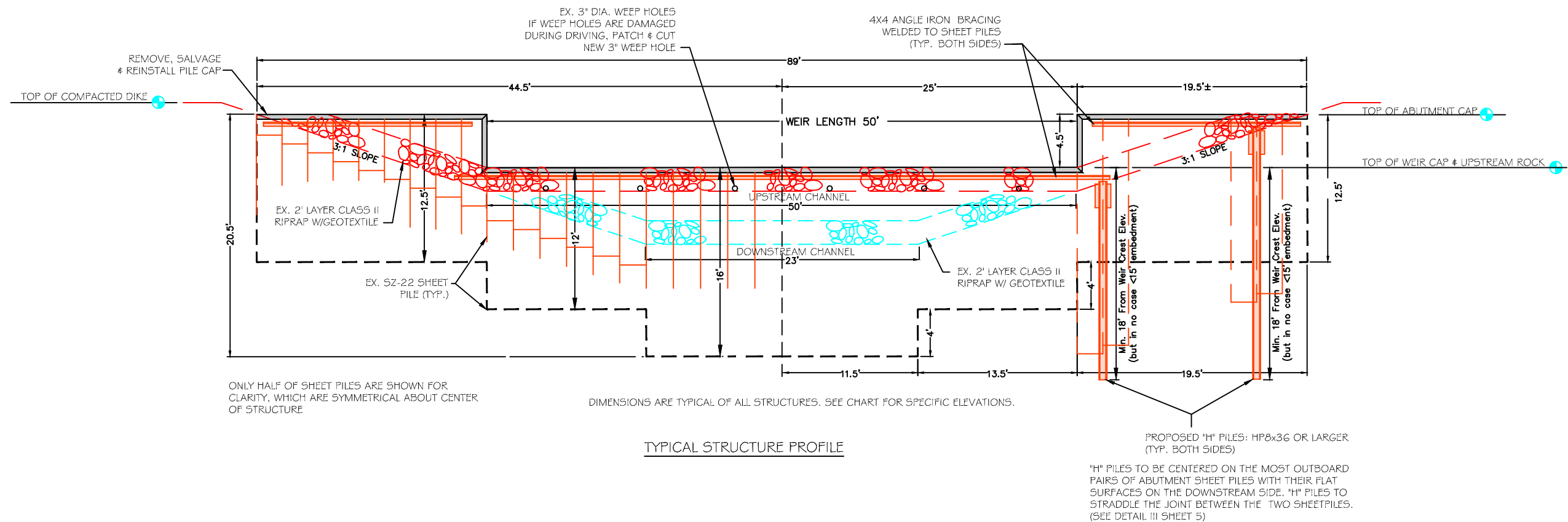CHECKED BY: DATE:
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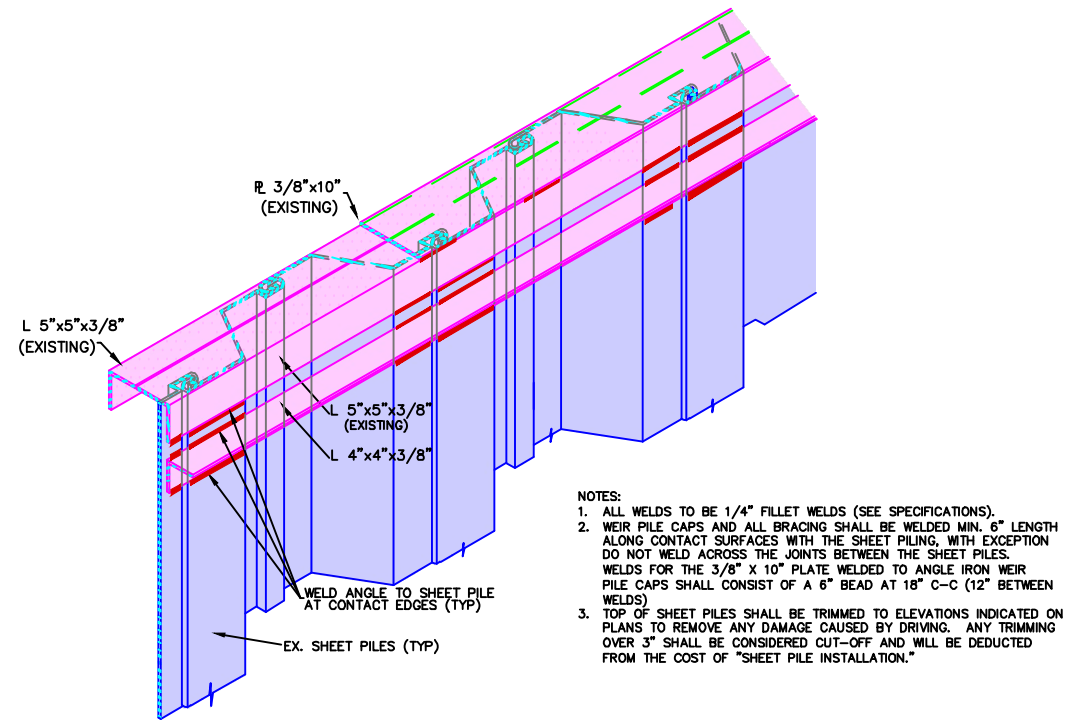APPROVED BY: DATE:
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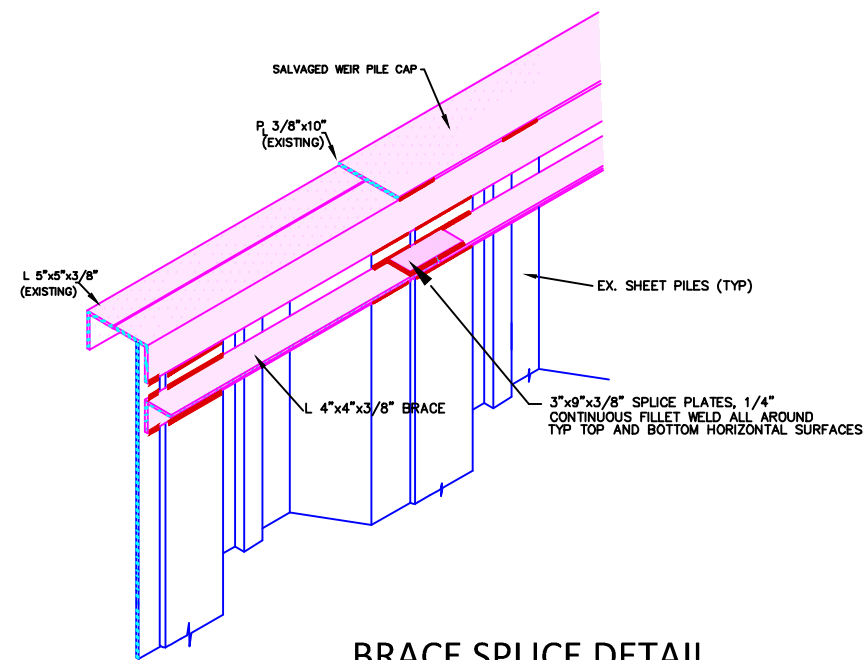
Detail Sheet I - Structure Profile
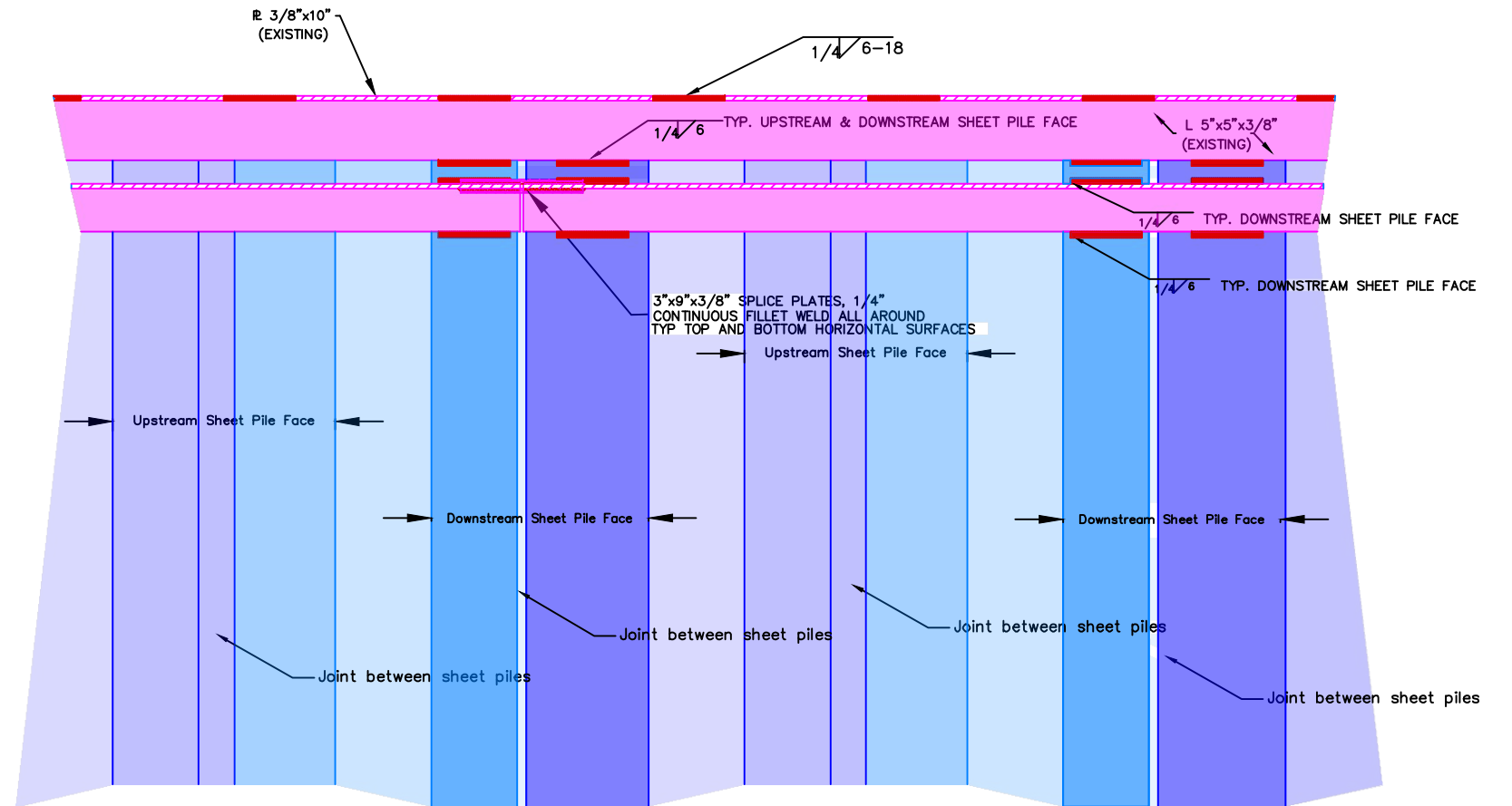## Whitetail Dam - Weir Repairs

SHEET: 3 of 5

℞ 3/8"x10"
(EXISTING)

L 5"x5"x3/8"
(EXISTING)

L 5"x5"x3/8"
(EXISTING)

L 4"x4"x3/8"

WELD ANGLE TO SHEET PILE
AT CONTACT EDGES (TYP)

EX. SHEET PILES (TYP)

NOTES:
1. ALL WELDS TO BE 1/4" FILLET WELDS (SEE SPECIFICATIONS).
2. WEIR PILE CAPS AND ALL BRACING SHALL BE WELDED MIN. 6" LENGTH
   ALONG CONTACT SURFACES WITH THE SHEET PILING, WITH EXCEPTION
   DO NOT WELD ACROSS THE JOINTS BETWEEN THE SHEET PILES.
   WELDS FOR THE 3/8" X 10" PLATE WELDED TO ANGLE IRON WEIR
   PILE CAPS SHALL CONSIST OF A 6" BEAD AT 18" C—C (12" BETWEEN
   WELDS)
3. TOP OF SHEET PILES SHALL BE TRIMMED TO ELEVATIONS INDICATED ON
   PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING
   OVER 3" SHALL BE CONSIDERED CUT—OFF AND WILL BE DEDUCTED
   FROM THE COST OF "SHEET PILE INSTALLATION."

SHEET PILE REPAIR DETAIL
NOT TO SCALE

SALVAGED WEIR PILE CAP

℞ 3/8"x10"
(EXISTING)

L 5"x5"x3/8"
(EXISTING)

EX. SHEET PILES (TYP)

L 4"x4"x3/8" BRACE

3"x9"x3/8" SPLICE PLATES, 1/4"
CONTINUOUS FILLET WELD ALL AROUND
TYP TOP AND BOTTOM HORIZONTAL SURFACES

BRACE SPLICE DETAIL
NOT TO SCALE

℞ 3/8"x10"
(EXISTING)

1/4 6—18

TYP. UPSTREAM & DOWNSTREAM SHEET PILE FACE

1/4 6

L 5"x5"x3/8"
(EXISTING)

1/4 6   TYP. DOWNSTREAM SHEET PILE FACE

1/4 6   TYP. DOWNSTREAM SHEET PILE FACE

3"x9"x3/8" SPLICE PLATES, 1/4"
CONTINUOUS FILLET WELD ALL AROUND
TYP TOP AND BOTTOM HORIZONTAL SURFACES

Upstream Sheet Pile Face

Upstream Sheet Pile Face

Downstream Sheet Pile Face

Downstream Sheet Pile Face

Joint between sheet piles

Joint between sheet piles

Joint between sheet piles

Joint between sheet piles

ELEVATION VIEW
SHEETPILE CURTAIN FACING UPSTREAM
NOT TO SCALE

PL 3/8"x10"
(EXISTING)

1/4

1/4

1/4

REMOVE EXISTING PILING CAP TO REPAIR SHEET PILE CURTAIN
REPAIR CAP AS NECESSARY AND REINSTALL PILING CAP
AFTER SHEET PILE IS REPAIRED PER REQUIREMENTS

L 5"x5"x3/8"
(EXISTING)

1/4

1/4 6-18

DOWNSTREAM FACE OF SHEETPILE CURTAIN
REMOVE AND REPLACE ROCK AND FILL
MATERIAL AS NECESSARY

PL3/8"x10"
(EXISTING)

PROPOSED H-PILE
HP8x36 OR LARGER

L 5"x5"x3/8"
(EXISTING)

WELD 15" L 4"x4"X 3/8" BRACKET TO SHEET
PILES. 1/4" FILLET WELD ALL JOINED
SURFACES, TYP BOTH SIDES OF "H" PILES
POSITION "H" PILES FOR MAXIMUM
BRACE TO SHEETPILE CONTACT

L 5"x5"x3/8"
(EXISTING)

L 4"x4"x3/8"

NOTES:
1. ALL WELDS TO BE 1/4" FILLET WELDS (SEE SPECIFICATIONS).
2. WEIR PILE CAPS AND ALL BRACING SHALL BE WELDED TO THE
   CONTACT SURFACES WITH THE SHEET PILING WITH 6" WELDS. DO
   NOT WELD ACROSS THE JOINTS BETWEEN THE SHEET PILES. WELDS FOR
   THE 3/8" X 10" PLATE WELDED TO ANGLE IRON WEIR PILE CAPS
   SHALL CONSIST OF A 6" BEAD AT 18" C-C (12" BETWEEN WELDS).
3. TOP OF SHEET PILE SHALL BE TRIMMED TO ELEVATIONS INDICATED ON
   PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING
   OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED
   FROM THE COST OF "SHEET PILE INSTALLATION."

WELD ANGLE TO SHEET PILE AT CONTACT
EDGES (TYP BOTH SIDES PILE CURTAIN)

WELD ANGLE TO SHEET PILE
AT CONTACT EDGES (TYP)

EX. SHEET PILES (TYP)

PROPOSED H-PILE
HP8x36 OR LARGER

"H" PILE DETAIL
NOT TO SCALE

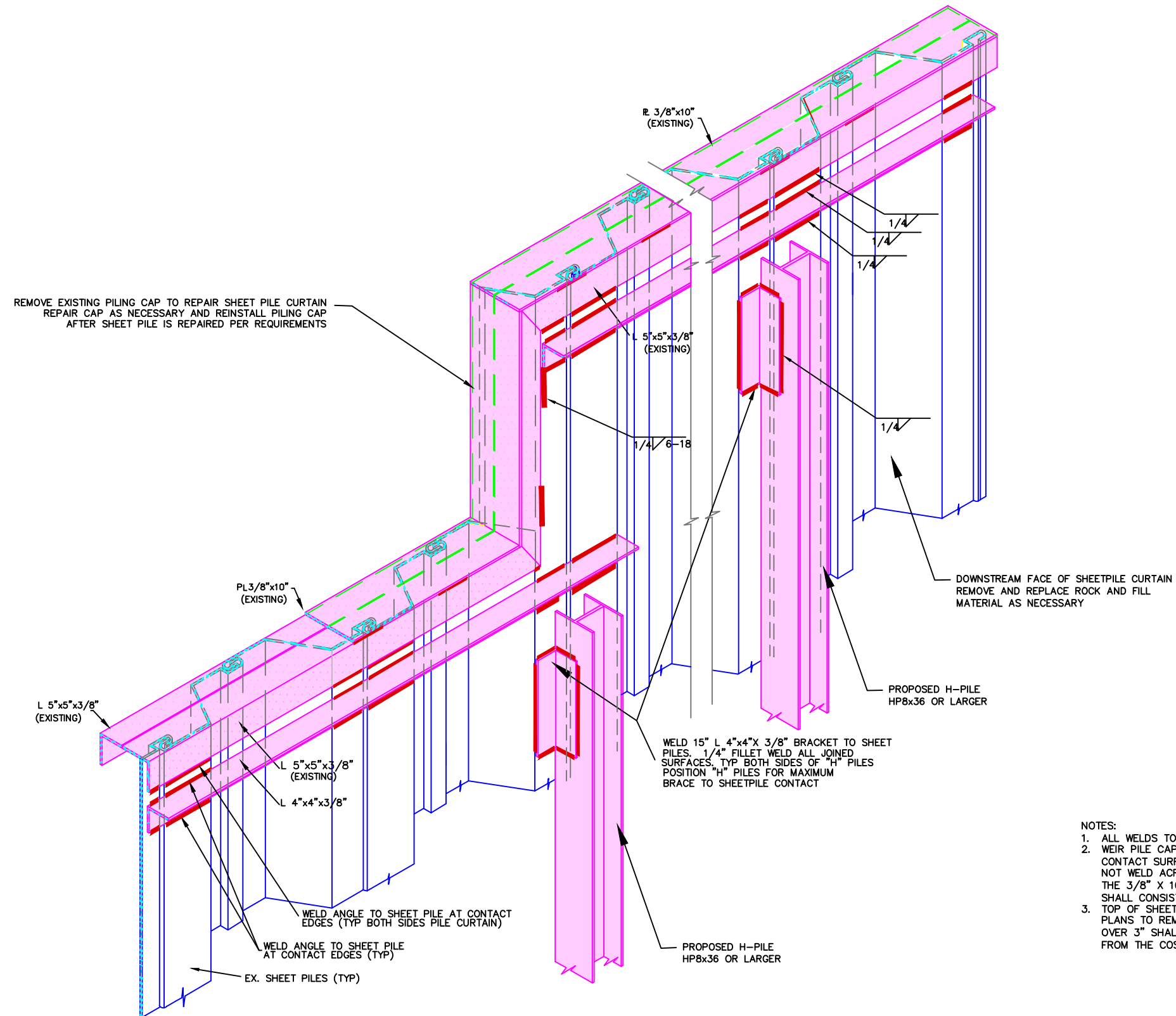|			
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MONTANA FISH, WILDLIFE & PARKS

Detail Sheet III
Whitetail Dam - Weir Repairs

SHEET: 5 of 5

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